

# TIME ALIGNED™ STUDIO MONITOR SYSTEM

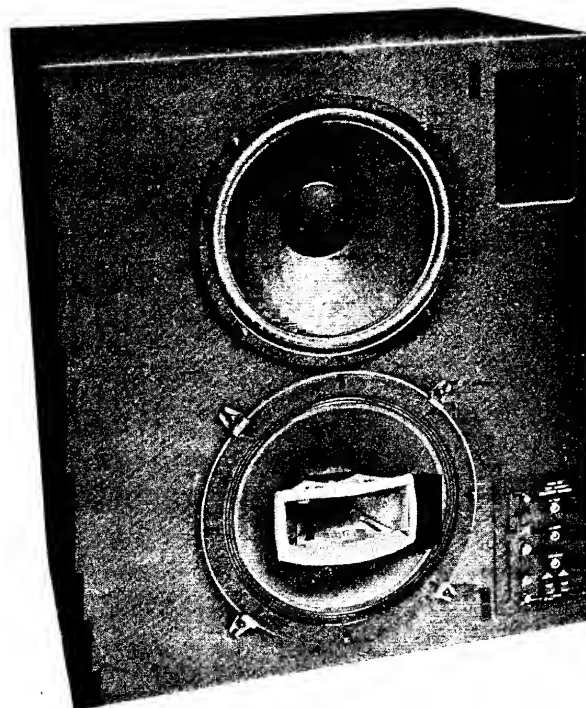


™ Licensed by E. M. Long Associates

MODEL  
813A

## FEATURES:

- The 813A uses a newly developed\* high frequency horn utilizing UREI's Diffraction Buffer plus other new techniques. This results in smoother response, extended H.F. range, and improved off-axis response.
  - Provides a reduction in transient distortion.
  - The new 800H-A H.F. horn incorporates many unique features which afford improved matching of horn driver throat to free air and substantially reduce the "Shadow Effect" common to some coaxial type loudspeakers. In addition, other acoustic techniques have been employed to significantly reduce transient distortion (ringing). These features improve the combining of the low and high frequency drivers in a smooth time and magnitude relationship.
  - Low loss crossover network allows maximum power transfer to the transducers and corrects the spatial alignment of acoustic centers.
  - BNC connector on the crossover network allows the use of Conductor Compensation as available on the UREI Model 6500 Power Amplifier. This reduces the reactive effects of the speaker cable and improves damping.
  - 604 ceramic duplex with UREI custom H.F. horn for extended and more uniform H.F. response.
  - Second L.F. 15" direct radiating driver fed from 3-way TA network for extended L.F. response and higher power handling capability at low frequencies.
  - >11.5 cu. ft. enclosure with pressure control aperture for excellent L.F. damping, good efficiency and low distortion.
  - Unique enclosure damping method provides high efficiency conversion of low frequency sound pressure to adiabatic energy.
- \* Patent pending.



The 813A Studio Monitor System is a joint R & D effort of UREI and E. M. Long Associates. The TIME-ALIGN™ TECHNIQUE is a real-time design method, utilizing proprietary instrumentation developed by Long which allows the driver placements and network parameters to be adjusted simultaneously, achieving near perfect alignment of the frequency components of a complex transient waveform as heard by a listener.

The importance of time (phase) parameters of loudspeaker systems, in addition to smooth frequency response, has been postulated for many years. These group time delay anomalies may be severe in some multi transducer systems, although they may exhibit satisfactory or even excellent frequency response.

Within the last decade, many advocates have presented outstanding scientific papers on this subject. Richard C. Heyser, among others, has contributed magnificent re-

search dealing with the importance of time (phase) correlation.

Quoting from Heyser in Audio, June 1976: "We realize that the concept of time response of a speaker is a whole new ballgame to many people and is probably a bit confusing if all you ever considered before was steady state frequency measurements.

Edward M. Long presented a paper before the Audio Engineering Society in May of 1976, entitled "A Time Align Technique for Loudspeaker System Design." UREI is a licensee of E. M. Long Associates, for the instrumentation methods and the use of the Trademark ™.

For stereo applications the model 813A Studio Monitor System is built in "mirror-image" (813 L, 813 R) to produce identical dispersion towards the listening position between two systems.



**UNITED RECORDING ELECTRONICS INDUSTRIES**

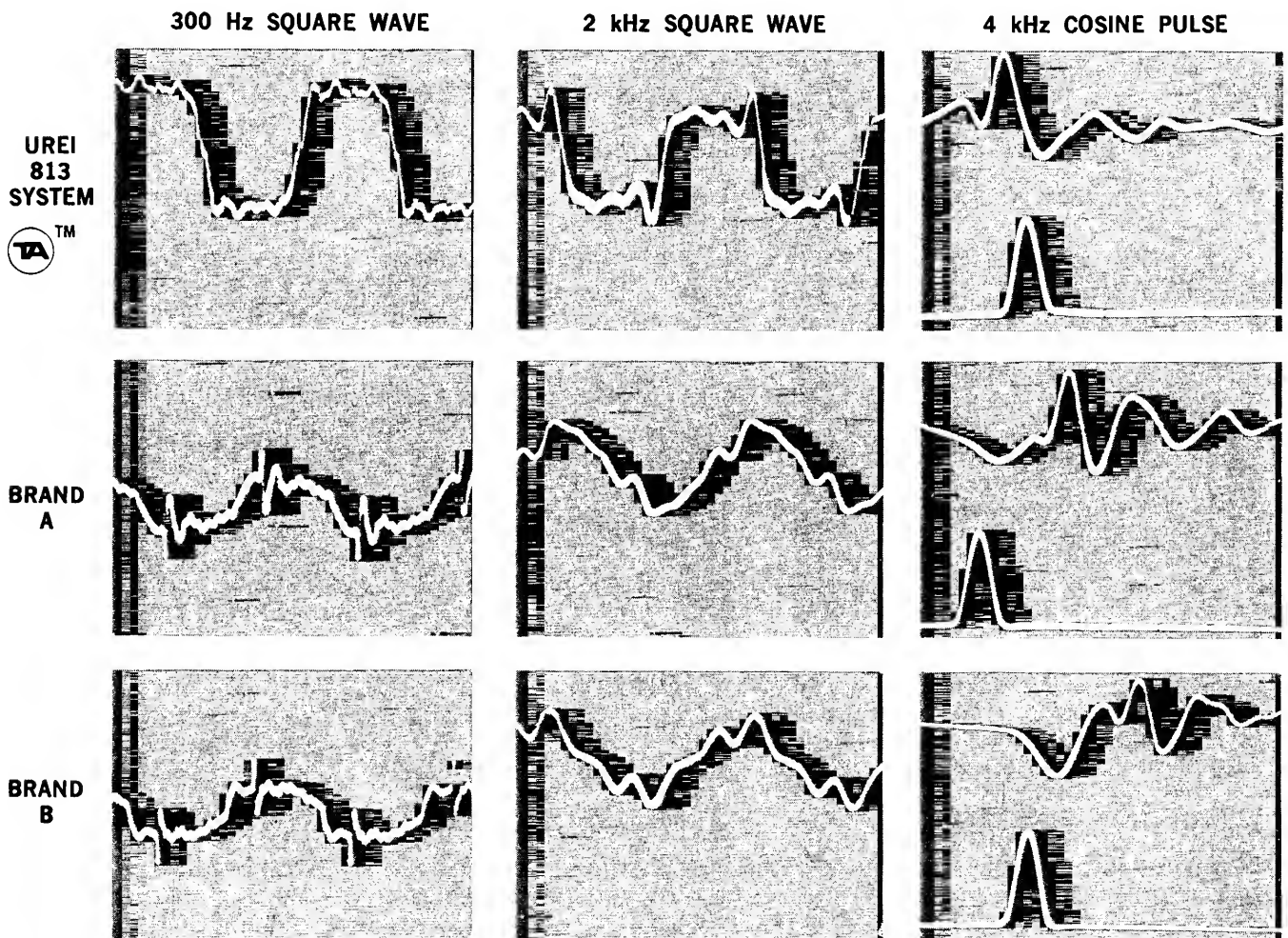
8460 SAN FERNANDO RD., SUN VALLEY, CALIFORNIA 91352  
TELEX 65-1389 UREI SNVY

(213) 767-1000



MODEL  
813A

The excellent transient behavior of the 813A system compared to two other popular networks and systems designed for the 604 series duplex speakers is graphically demonstrated below. (Crossover controls adjusted per manufacturers' instructions for best frequency response.)



## SPECIFICATIONS:

**Type:** Dual woofer coaxial with Model 839 three way TA network

**Power Rating:** 100 watts 40 Hz to 20 kHz, with pink noise

**Frequency response:**  $\pm 3\text{dB}$ , 40 Hz to 15 kHz measured "freespace"  
 $4\pi$  steradians ( $h = 5\text{ m}$   $d = 1\text{ m}$ )

**Sensitivity:** 89 dB SPL/volt/meter

**Impedance:** 8 ohms, nominal (minimum impedance  $> 4$  ohms)

**Network:** UREI 839, 3-way

**Cabinet:** Utility flat black painted

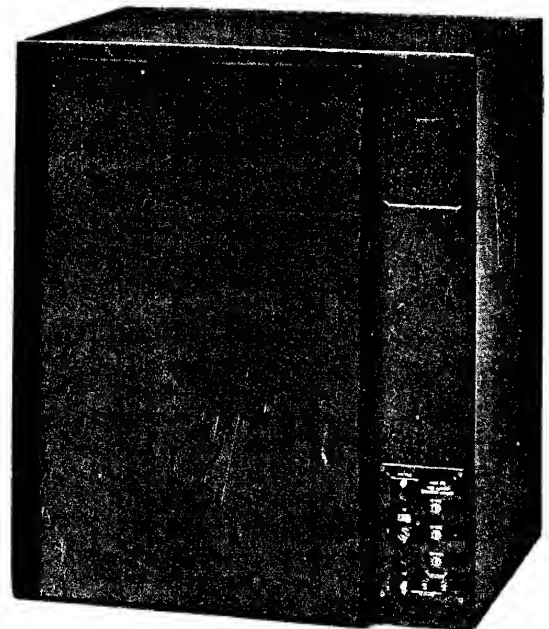
**Weight:** 83 kg (183 pounds)

**Dimensions:** Height = 0.914 m (36")

Width = 0.787 m (31")

Depth = 0.584 m (23") without grille

0.660 m (26") with grille



**UREI 813A SYSTEM  
WITH ACCESSORY GRILLE  
813AG**

BEFORE PROCEEDING WITH COMPLETE UNPACKING AND SETUP,  
CONSULT UNPACKING AND INSPECTION INSTRUCTIONS ON PAGE

**model 813A**

**TIME ALIGNED<sup>TM</sup> STUDIO MONITOR**

**LOUDSPEAKER SYSTEM**



**United Recording Electronics Industries**

**8460 SAN FERNANDO ROAD, SUN VALLEY, CALIFORNIA 91352**

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Printed in U.S.A.

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## INTRODUCTION

The Model 813A Studio Monitor System is designed for use in professional sound monitoring installations. Typical 4 pi steradian "free space" frequency response (measured at a distance of 1 meter at a height of 5 meters above the ground) is shown in Figure 1, curve A. The increase in response below 150 Hz to be expected when the 813A system is coupled into a control room is shown in curve B, which is the unequalized response measured with a UREI Sonipulse in a commercial recording studio control room, (the 813A system mounted in a quarter-space configuration). References which may be helpful to the user in determining the optimum installation configuration are listed at the end of this instruction data.

The Model 813A systems are supplied in mirror-image "stereo pairs". It is recommended that the cabinets be mounted in the control room with the control boxes on the lower, outside edge of the cabinet (away from the center of the control room). This is essential when the accessory grille is attached to the front of the cabinet in order to avoid diffraction of the high frequencies at the mixer's position.

## AMPLIFIER INTERFACE

The Model 813A system is power rated at 75 watts (40 Hz to 20 kHz, with pink noise). However, to accommodate the peak power demands of contemporary music at the high levels usually desired in recording studio control rooms, an amplifier rated at 300 watts into 8 ohms is recommended. The 813A system presents its minimum load impedance (4 ohms) at 125 Hz. This provides maximum power transfer from many popular solid state amplifiers in the frequency range normally requiring the greatest acoustical output (fundamentals of bass guitar, etc.). Also, in this frequency range, the 813A's power factor is near unity, which additionally enhances its acoustic power output. Some amplifiers with transformer outputs offer a selection of output impedances. We recommend to connect the 813A system to the "4 ohm" output.

It has been found that certain of the new solid state amplifiers employing power field-effect transistors (FET's) are quite critical of load impedance at high power-output levels. To protect these expensive power transistors from damage, fairly sophisticated protective systems are usually included in the amplifier, resulting in a highly objectionable "cycling" or oscillating of the protective cut-out circuitry when overload occurs. This phenomenon was encountered with the 813A system only when operating at extremely high monitoring levels.

## MODEL 839 CONTROL PANEL

Model 839 contains the mid-range, high frequency drive, and high frequency trim controls. The operating range of these controls is shown in Figure 2, curves C, D, and E. The 839 control panel contains current limiting incandescent lamps and the low and high frequency drivers are fused separately:

	<u>Lamp Type</u>	<u>Fuse Type</u>
800 W L.L.F. Woofer	#1723 or #1133	7 amp 3 AG
604-8G L.F. Woofer	#1133	
604-8G H.F. Driver	#81	1 amp 3 AG

The current limiting lamps are selected to indicate excessive current peaks which occur near the system overload conditions. The passive Time-Align™ delay and crossover network is connected by a multi-conductor cable to a terminal strip at the rear of the control box. Correct connection of the cable to the control box is assured by aligning the red dot on the cable-connector fanning strip alongside the dot on the back of the control box. The light panel cover may be conveniently removed for the replacement of the incandescent lamps.

NOTE: When operating the 839 Crossover Network it must always be loaded properly. If the system is driven with high signal levels while a speaker is disconnected, (or a voice coil is open), voltages may be developed which exceed the ratings of the capacitors in the network. The warranty is void if the network is operated unloaded.

The following is a schedule of the color code for the connecting wires to the individual speakers:

<u>WIRE COLOR FROM CONTROL PANEL</u>	<u>TERMINALS AT SPEAKER</u>
Black	604-8G H.F. Black
Red	604-8G H.F. Red
White	604-8G L.F. Black
Green	604-8G L.F. Red
Brown	800 W No Mark
Yellow	800 W Purple Dot

The 813A uses a newly developed high frequency horn utilizing UREI's Diffraction Buffer plus other new techniques. This results in smoother response, extended H.F. range, and improved off-axis response.

NOTE: When handling the Speaker System be careful not to damage the blue foam material which is part of the H.F. Horn Assembly.

#### References:

1. "Determination of Loudspeaker Signal Arrival Times" by Richard C. Heyser, Parts I and II, October and November 1971 Journal of the Audio Engineering Society.
2. "Geometry of Sound Perception" by Richard C. Heyser, Technical Paper at May 1975 AES Convention.
3. "A Time-Align Technique for Loudspeaker System Design" by Edward M. Long, Technical Paper at May 1976 AES Convention.
4. Elements of Acoustical Engineering by Harry F. Olson, Chapter I "Standing Waves in Rooms" by Michael Rettinger, Recording Engineer Producer, December 1976.

## REPAIRS AND WARRANTY

This product is factory warranted to the original purchaser against defects in material and workmanship for one year after initial purchase. This limited warranty must be activated at the time of purchase by returning the registry portion of the Warranty Card to the factory. Should a malfunction ever occur, the dealer from whom the unit was purchased will be glad to handle return for factory repair. Please call or write to the factory for a Return Authorization Number which must accompany all repairs.

For prompt service ship the unit prepaid directly to the factory with the RA Number visible on the shipping label. Be sure it is well packed in a sturdy carton, with shock-absorbing material such as foam rubber, styrofoam pellets or "bubble-pack" completely filling the remaining space. Particular attention should be paid to protecting the controls, switches, etc. Tape a note to the top of the unit describing the malfunction, and instructions for return. We will pay one-way return shipping costs on any in-warranty repair.

Because of specially selected components in this product, field repairs are not authorized during the warranty period, and attempts to perform repairs may invalidate the warranty.

### ADDENDUM

RE: Repairs and Warranty  
UREI 604-8G Speaker  
(reference: Altec-OEM-300C)

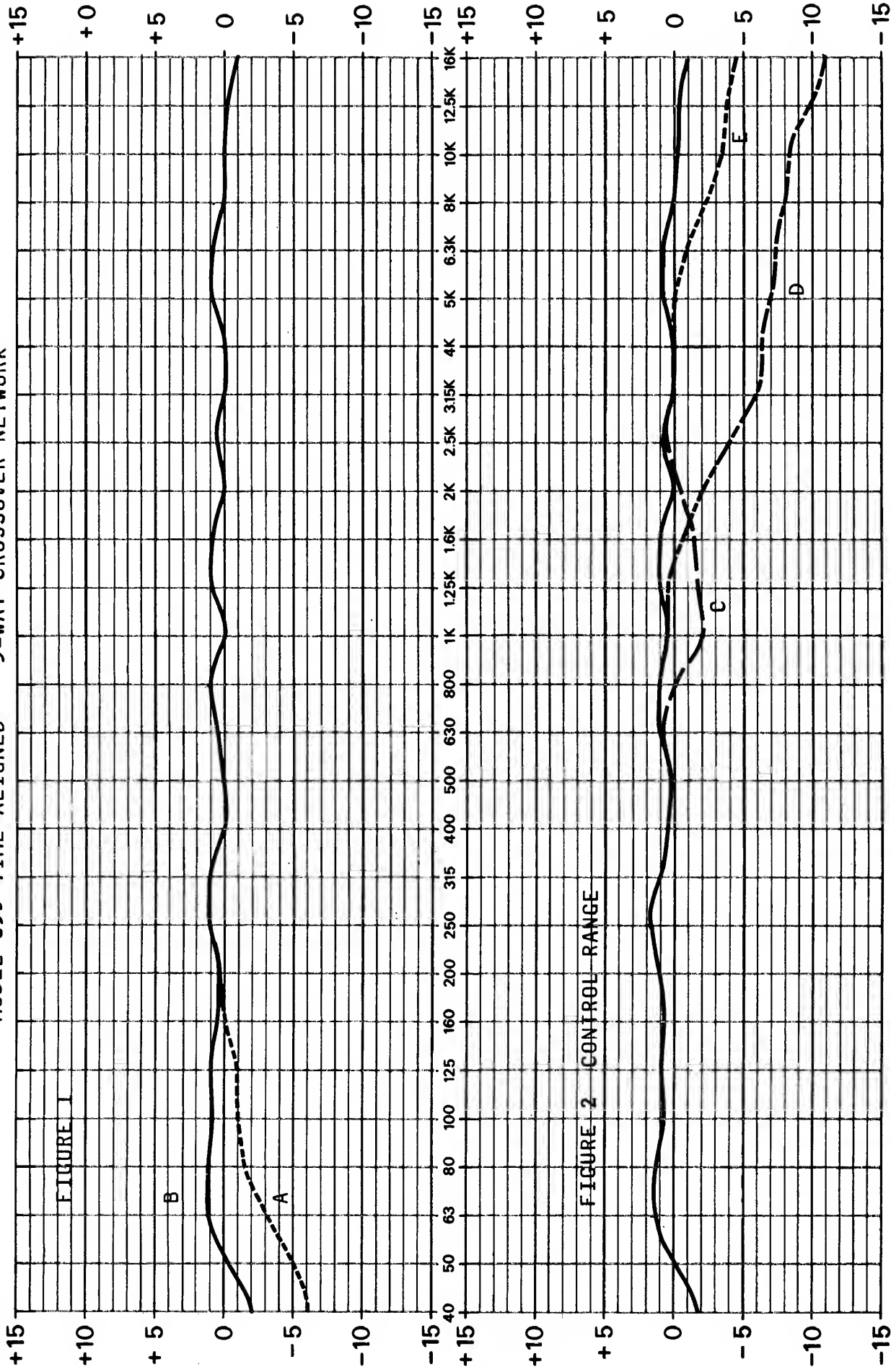
Consult your telephone directory yellow pages for your nearest Altec Corporation repair station. If further assistance is desired call:

Altec Lansing (714)774-2900



# SONIPULSE SYSTEM ANALYSIS

MODEL 813A TIME ALIGNED TM MONITOR SYSTEM  
MODEL 839 TIME ALIGNED TM 3-WAY CROSSOVER NETWORK



United Recording Electronics Industries  
8480 SAN FERNANDO RD., SUN VALLEY,  
CALIFORNIA 91352 (213) 761-1000

REMARKS  
Figure 1: A = 4 pi steradian (free space) response,  
B = typical response in a control room (unequalized).

Figure 2: Control range of: C = Mid range, D = High frequ. drive, E = High frequ. trim.

# ALTEC CORPORATION

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1515 South Manchester Avenue  
P.O. Box 3113 • Anaheim, California 92803 U.S.A.  
714/774-2900 • Telex: 65-5415

July 1, 1981

TO ALL ALTEC RE-CONING STATIONS:

Altec manufactures a special 604-type speaker for UREI (United Recording Electronics Industries) called the OEM-300C. This OEM version of the 604 is sold worldwide by UREI as the main ingredient of their studio monitors. The OEM-300C is covered by Altec's standard 5-year warranty.

You may be receiving OEM-300C speakers from time to time. Re-coning is similar to re-coning the Altec 604-8G.

The re-cone kit required by the OEM-300C is the RCA-604-8H, part number 10-02-03-347. This is listed in the "Altec Cone and Voice Coil" replacement list dated August, 1980.

The felt washer included in the cone kit must be applied with care. Cement applied to the outer edges of the felt to hold it in place must not extend more than  $\frac{1}{4}$ " under the edge of the felt. If it extends further, it may possibly inhibit the excursion of the voice coil.

Please advise me of any difficulties or questions you may encounter with repairs on the OEM-300C.

Regards,

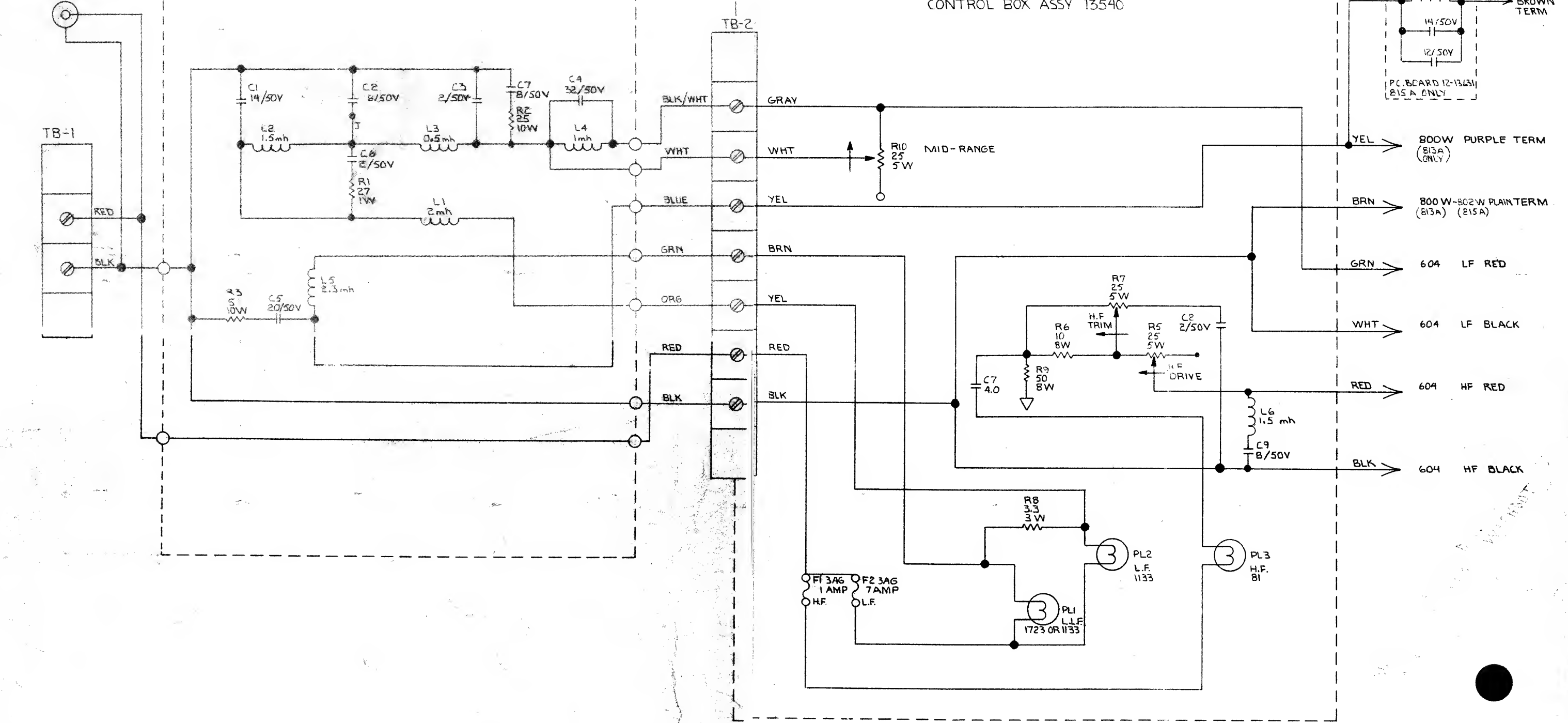
  
H.C. Schnackenberg  
National Customer Service Manager



POWER AMPLIFIER  
CONNECTOR

NETWORK BOX ASSY 13541

CONTROL BOX ASSY 13540



4. ○ INDICATES WIRE TERMINATION ON P.C. BOARD.
  3. ARROW ON POTENTIOMETER INDICATES CLOCKWISE DIRECTION
  2. CAPACITOR VALUES ARE IN MICROFARADS
  1. RESISTOR VALUES ARE IN OHMS ± 5%
- NOTES: UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		APPROVALS: R.P.M. DATE: 1-12-81		UNITED RECORDING ELECTRONICS INDUSTRIES 10000 WILSHIRE BLVD. N.W. HOLLYWOOD, CALIFORNIA 91605	
NEXT ASSY:		USED ON:		SCHEMATIC	
SIZE: D		MODEL NO: 839		DRAWING NO: 13545-B	